

PO No	Supplier	Line Item No	Ref No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Serial No	Status	Receive Date	Price/Unit	Aging Days	Past Due	Total	Supplier Name
PO038420	TWM001-VU	1	1	Net 30	M4130NT1.000W.120	4130 Round Tube 1.00 X .120Wall : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft				20	11/28/2017	✓ 20	✓ S017136	Stock	12/4/2017	\$ 2.88 / ft	0		\$58.56	TW Metals	
		2			M304TR0.750W.049	304 Round Tube .750 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASME A269 receive ft				160		✓ 160	✓ S017137	Stock	12/4/2017	\$ 2.10 / ft	0		\$336.00	TW Metals	
		3			M304TR0.500W.048	304 Round Tube .500 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASME A269 receive ft				40		✓ 40	✓ S017138	Stock	12/4/2017	\$ 2.80 / ft	0		\$112.00	TW Metals	
		4			M6061T6T0.625W.065	6061-T6 Round Tube .625 X .065W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER VW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft				36		✓ 36	✓ S017139	Stock	12/4/2017	\$ 3.15 / ft	0		\$113.40	TW Metals	
		5			M6061T6T0.375W.058	6061-T6 Round Tube .375 X .058W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER VW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft				24		✓ 24	✓ S017140	Stock	12/4/2017	\$ 2.15 / ft	0		\$51.60	TW Metals	
		6			M6061T6T0.625W.125	6061-T6 Round Tube .625 X .125W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER VW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft				12		✓ 12	✓ S017141	Stock	12/4/2017	\$ 5.15 / ft	0		\$81.80	TW Metals	
		7			M130NT0.750W.049	4130 Round Tube .750 X .049W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft				24		✓ 24	✓ S017142	Stock	12/4/2017	\$ 11.48 / ft	0		\$274.48	TW Metals	
		8			M4130NT0.750W.083	4130 Round Tube .750 X .083W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft				20		✓ 20	✓ S017143	Stock	12/4/2017	\$ 3.85 / ft	0		\$78.20	TW Metals	
									Total:	336		337								\$1,086.10	



O'Neal High-Performance Metals Group



Packing
Slip

ORDER NO.: 80895542 FROM: CHIC PAGE 1

CUST NUMBER: 1203820 NET WGT: 121.060 REQ. DATE: 11/28/17 CONFIRMED
 SOLD TO: SHIP TO:
 DART AEROSPACE LTD DART AEROSPACE LTD
 1270 ABERDEEN ST 1270 ABERDEEN ST
 HAWKSBURY ON HAWKSBURY ON
 CANADA CN K6A 1K7 ONTARIO CANADA CN K6A 1K7

SALESPERSON: DONNA SMALLEY SHIP BY: 11/22/17
 TERMS: NET 30 DAYS VIA: COMMON CARRIER
 F.O.B.: SHIPPING POINT FREIGHT: PREPAID
 CUST ORD NO.: PO038420 RELEASE NO.:
 RECEIVING PHONE:

LINE ITEM DESCRIPTION WIDTH LENGTH
 0001 33364 SMLS CD 4130 RD 6736 1 X .120 17/24 FT

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	20.000 FT	20.333 FT	20.333 FT	22.936

PCS 1

** 1 TEST REPORTS REQUIRED **
 ** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00
 PO:49371988 HT:606333 PC: 1 UOM
 MLT:GERMANY MFG:GERMANY CUSTOMER QTY:
 SLB/CL:1639142

0002 36860 SMLS CD 304/L A269 3/4 OD X .049 WA 20' CL

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	160.000 FT	160.000 FT	160.000 FT	58.675

PCS 8

** 1 TEST REPORTS REQUIRED **
 ** 1 CERTS REQUIRED **

ECCN: 2B999.g Export License: NLR Expiration Date: 0/00/00
 PO:49363338 HT:YX1108593 PC: 8 UOM
 MLT:CHINA MFG:CHINA CUSTOMER QTY:
 SLB/CL:-

0003 36506 SMLS CD 304/L A269 1/2 OD X .049 WA 20' ML

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	40.000 FT	40.000 FT	40.000 FT	9.437

PCS 2

** 1 TEST REPORTS REQUIRED **
 ** 1 CERTS REQUIRED **

ECCN: 2B999.g Export License: NLR Expiration Date: 0/00/00
 PO:49361319 HT:YX1604531 PC: 2 UOM
 MLT:CHINA MFG:CHINA CUSTOMER QTY:
 SLB/CL:-

SP/1-124

1
THANK YOU FOR THIS ORDER

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE
 PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL
 REVIEW.
<http://www.twmetals.com/invoice-terms.html>



O'Neal High-Performance Metals Group



Packing
Slip

ORDER NO.: 80895542 FROM: CHIC PAGE 2

CUST NUMBER: 1203820 NET WGT: 121.060 REQ. DATE: 11/28/17 CONFIRMED
SOLD TO: SHIP TO:
DART AEROSPACE LTD
1270 ABERDEEN ST
HAWKESBURY ON
CANADA CN K6A 1K7
ONTARIO CANADA CN K6A 1K7

SALESPERSON: DONNA SMALLEY SHIP BY: 11/22/17
TERMS: NET 30 DAYS VIA: COMMON CARRIER
F.O.B.: SHIPPING POINT FREIGHT: PREPAID
CUST ORD NO.: POU38420 RELEASE NO.:
RECEIVING PHONE:

LINE ITEM DESCRIPTION WIDTH LENGTH
0004 42558 D6061-T6 5/8 OD X .065 WA 12 FT ML

CLN# ORD QTY INVOICE QTY SHIPPED QTY WT
36.000 FT 36.000 FT 36.000 FT 4.821

PCS 3

** 1 TEST REPORTS REQUIRED **
** 1 CERTS REQUIRED **

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00
PO:49369003 HT:F002408380002 PC: 3 CUSTOMER QTY:
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:223156 UOM

0005 41952 D6061-T6 3/8 OD X .058 WA 12 FT ML

CLN# ORD QTY INVOICE QTY SHIPPED QTY WT
24.000 FT 24.000 FT 24.000 FT 1.627

PCS 2

** 1 TEST REPORTS REQUIRED **
** 1 CERTS REQUIRED **

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00
PO:49376296 HT:F002504860001 PC: 2 CUSTOMER QTY:
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:224194 UOM

0006 42588 D6061-T6 5/8 OD X .125 WA 12 FT ML

CLN# ORD QTY INVOICE QTY SHIPPED QTY WT
12.000 FT 12.000 FT 12.000 FT 2.771

PCS 1

** 1 TEST REPORTS REQUIRED **
** 1 CERTS REQUIRED **

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00
PO:49370848 HT:F002436350002 PC: 1 CUSTOMER QTY:
MLT:UNITED STATES MFG:UNITED STATES SLB/CL:223458 UOM

DP-24

1
THANK YOU FOR THIS ORDER

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PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL
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O'Neal High-Performance Metals Group

Packing
Slip

ORDER NO.: 80895542 FROM: CHIC PAGE 3

CUST NUMBER: 1203820 NET WGT: 121.060 REQ. DATE: 11/28/17 CONFIRMED
 SOLD TO: DART AEROSPACE LTD
 DART AEROSPACE LTD
 1270 ABERDEEN ST
 HAWKESBURY ON
 CANADA CN K6A 1K7
 CN K6A 1K7

SALESPERSON: DONNA SMALLEY SHIP BY: 11/22/17
 TERMS: NET 30 DAYS VIA: COMMON CARRIER
 F.O.B.: SHIPPING POINT FREIGHT: PREPAID
 CUST ORD NO.: PO038420 RELEASE NO.:
 RECEIVING PHONE:

LINE	ITEM DESCRIPTION	WIDTH	LENGTH	
0007	33047 CDS 4130 6736 3/4 X .049	17/24 FT		
CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	24.000 FT	23.917 FT	23.917 FT	8.771

PCS 1

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00
 PO:49371988 HT:606338 PC: 1 CUSTOMER QTY: UOM
 MLT:GERMANY MFG:GERMANY SLB/CL:1639142

0008 33096 SMLS CD 4130 6736 3/4 OD X .083 WA 17/24 FT

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	20.000 FT	20.333 FT	20.333 FT	12.022

PCS 1

** 1 TEST REPORTS REQUIRED **

** 1 CERTS REQUIRED **

ECCN: 9A991.d Export License: NLR Expiration Date: 0/00/00
 PO:49365374 HT:603114 PC: 1 CUSTOMER QTY: UOM
 MLT:GERMANY MFG:GERMANY SLB/CL:1634562

BROKERS KUEHNE AND NAGEL LTD

PACK INFO				WIDTH	LENGTH	HGHT
AREA	TYPE OF PKG	PKGS	GRS WEIGHT			
YRC	REDDICRATE	1.000	221.000	24.5000		
YRC	REDDICRATE	1.000		20.5000		
		2.000	221.000			

BY: LM



O'Neal High-Performance Metals Group



**Packing
Slip**

ORDER NO.: 80895542 FROM: CHIC PAGE 4

CUST NUMBER: 1203820	NET WGT:	121.060	REQ. DATE:	11/28/17 CONFIRMED
SOLD TO: DART AEROSPACE LTD 1270 ABERDEEN ST HAWKSBURY ON CANADA				
CN K6A 1K7		SHIP TO: DART AEROSPACE LTD 1270 ABERDEEN ST HAWKSBURY ON ONTARIO CANADA		CN K6A 1K7
SALESPERSON: DONNA SMALLEY	SHIP BY:	11/22/17		
TERMS: NET 30 DAYS	VIA:	COMMON CARRIER		
F.O.B.: SHIPPING POINT	FREIGHT:	PREPAID		
CUST ORD NO.: PO038420	RELEASE NO.:			
LINE ITEM DESCRIPTION	RECEIVING PHONE:	WIDTH	LENGTH	
RT 000-		UNLOAD TYPE: NONE SPECIFIED		

RA/10-4

DATE SHIPPED _____

1

DATE FILLED _____

THANK YOU FOR THIS ORDER

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PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL
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O Neal High-Performance Metals Group



**Packing
Slip**

ORDER NO.: 80895542 FROM: CHIC PAGE 5

CUST NUMBER: 1203820	NET WGT:	121.060	REQ. DATE: 11/28/17	CONFIRMED
SOLD TO: DART AEROSPACE LTD 1270 ABERDEEN ST HAWKESBURY ON CANADA		SHIP TO: DART AEROSPACE LTD 1270 ABERDEEN ST HAWKESBURY ON ONTARIO CANADA		
CN K6A 1K7		CN K6A 1K7		
SALESPERSON:	DONNA SMALLEY	SHIP BY:	11/22/17	
TERMS:	NET 30 DAYS	235 TUBEWAY		
F.O.B.:	SHIPPING POINT	CAROL STREAM	IL 60188	
CUST ORD NO.:	PO038420			
VIA:	COMMON CARRIER			
FREIGHT:	PREPAID			
RELEASE NO.:				
RECEIVING PHONE:				

"TW Metals MSDS data is available on our web site at www.twmetals.com. MSDS data can be found under the Technical Resources Tab, Product Statistics & Data and the TW Metals MSDS's heading. If you do not have web site access you may telephone 610-458-1300 and we will mail or fax a copy of our current MSDS data to your location."

"CERTIFICATE OF CONFORMANCE"

"TW Metals certifies that the material supplied on this purchase order and contained in the heat/lot number referenced above has been manufactured, inspected, and tested in accordance with the material specification. These records are on file at TW Metals. Packaging material for shipments to Europe and China consists of manufactured wood products and complies with the European emergency measures for coniferous non-manufactured wood packing material."

Authorized Test Report Clerk

Luziraida Matos

Date: 11/22/17

These commodities have been exported from the United States in accordance with the U.S. export control laws, export administrations regulations. Diversion contrary to U.S. law prohibited.

1
THANK YOU FOR THIS ORDER

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE
PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL
REVIEW.
<http://www.twmetals.com/invoice-terms.html>



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

**PURCHASE ORDER
PO038420**

Supplier: TWM001-VU
TW Metals
PO Box 933014
Atlanta, GA 31193-3014 USA
Phone: 585 768 5600
Fax: 585 768 5601

PO No: PO038420
PO Date: 11/20/17
Due Date: 11/28/17
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

E-MAILED
NOV 20 2017

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Part	Rev	Description	Item Tax	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1	M4130NT1.000W.120		4130 Round Tube 1.00 X .120Wall : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	20 ft	0 ft	20 ft	\$2.8858/ft	\$57.72 58.50
2	M304TR0.750W.049		304 Round Tube .750 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASTM A269 receive ft		Firmed	11/28/17	160 ft	0 ft	160 ft	\$2.10/ft	\$336.00
3	M304TR0.500W.049		304 Round Tube .500 X .049W : MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING AS PER ASTM A213 OR ASME SA213 OR ASTM A269 receive ft		Firmed	11/28/17	40 ft	0 ft	40 ft	\$2.80/ft	\$112.00
4	M6061T6T0.625W.065		6061-T6 Round Tube .625 X .065W : MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WV-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR		Firmed	11/28/17	36 ft	0 ft	36 ft	\$3.15/ft	\$113.40



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

**PURCHASE ORDER
PO038420**

Items											
Line Item	Part	Rev	Description	Item Tax	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
			ASTM B241 receive ft								
5	M6061T6T0.375W.058		6061-T6 Round Tube .375 X.058W : MATERIAL: 6061- T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft		Firmed	11/28/17	24 ft	0 ft	24 ft	\$2.15/ft	\$51.60
6	M6061T6T0.625W.125		6061-T6 Round Tube 0.625 X.125W : MATERIAL: 6061- T6/T62/T6510/T6511 SEAMLESS TUBING AS PER WW-T-700/8 OR QQ-A-200/8 OR QQ-A-225/8 OR AMS 4080 OR AMS 40 82 OR AMS 4083 OR ASTM B210 OR ASTM B241 receive ft		Firmed	11/28/17	12 ft	0 ft	12 ft	\$5.15/ft	\$61.80
7	M4130NT0.750W.049		4130 Round Tube .750 X.049W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	24 ft	0 ft	24 ft	\$11.4754/ft	\$275.41
8	M4130NT0.750W.083		4130 Round Tube .750 X.083W : MATERIAL: AISI 4130N STEEL TUBING AS PER MIL-T-6736 OR AMS 6371/6360/6361/6362 6373/6374 receive ft		Firmed	11/28/17	20 ft	0 ft	20 ft	\$3.85/ft	\$77.00

Grand Total: \$1,084.93

Order Notes

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO038420

Order Notes

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

A handwritten signature in black ink, appearing to read "Chantal Lavoie".

Plex 11/20/17 2:08 PM DART.LAVOIE.CHANTAL

Benteler Steel/Tube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49 5254 81-0 Fax: +49 5254 13666

BENTELER ▼
Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

			Dokument-Nr.:			Prüf-Nr.:			Prüf-Nr.:		
			Document No.:			Inspection No.:			Page:		
			Nº. du document			Nº. du certificat			Page:		
Pos.	Stück	Maße	Gesamtänge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen	Blatt:	2 /	4
Item	Number	Dimensions	Length total	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths	Page:		
Poste	Nombr	Dimensions	Longueur totale	Poids	No. de coulée	Pression d'épreuve	Série de n°. des tubes	Longueurs multiples			
0025	216	1.000" C.D. + 0.120" WT 20 FT - 24 FT	4393,70	4912	606333	0,18					

Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos.	Schmelzen-Nr.	C	Si	Mn	P	S	CR	Mo	Ni	CU
Item	Heat No.									
Poste	No. de coulée									
0025	606333	0,330	0,250	0,52	0,008	0,002	0,87	0,18	0,11	0,12

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos.	Schmelzen-Nr.	C	Si	Mn	P	S	CR	Mo	Ni	CU
Item	Heat No.									
Poste	No. de coulée									
0025	606333	0,320	0,260	0,50	0,008	0,001	0,89	0,18	0,11	0,13

Prüfergebnisse / Test results / Résultats des essais

Die Rohre wurden zerstörungsfrei geprüft:	ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections; PASSSED
The tubes are non-destructive tested:	ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections;
Les tubes ont passé un essai non destructif:	Notch depth: 0,30 mm; notch width: \leq notch length min. 2 x transducer width [max. 50 mm]
Augensichtskontrolle:	PASSED
Visual inspection:	PASSED
Examen visuel:	PASSED

Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachhängen.
The sampling was carried out on multiple lengths.
L'échantillonage était réalisé aux longueurs multiples.



Benteler Steel/Tube GmbH
Postfach 13 40
33042 Paderborn
Deutschland
Tel.: +49 5254 81-0 Fax: +49 5254 13666

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Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3:1
INSPECTION CERTIFICATE EN 10204-3:1
CERTIFICAT DE RECEPTION EN 10204-3:1

Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Epreuve à section complète

Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Streckgrenze	Zugfestigkeit	Dehnung	Prüf-Nr.:	Inspection No.:	Blatt: 3 / 4
Item	Specimen No.	Cast No.	Specimen dimensions:	Yield strength	Tensile strength	Elongation		No. du certificat:	Page: Page:
Poste	No. de l'érouv.	No. de coulée	Dimensions de l'éprouve.	Limite élastique	Resistance à la traction	Allongement			
Anforderungen									
Requirements:			mm	Rp 0,2 %	Rm	A2 nd	1. Formel		
Exigences				KSI	KSI	%	1. Formule		
				MIN 75	MIN 95	MIN 12.00	1. Formule		
0025	000001	606333	25,40 X 3,00	100	118	24,00			
0025	000002	606333	25,40 X 3,00	99	118	22,00			
0025	000003	606333	25,40 X 3,00	100	118	22,00			
0025	000004	606333	25,40 X 3,00	99	118	22,00			
0025	000005	606333	25,40 X 3,00	99	118	24,00			

Randentkohlung / Surface decarburization / Décarburation superficielle

Pos. / Item / Poste: 0025
acc. to AMS-6360, partial decarburization outside max. 0.017 in, partial decarburization outside and inside max. 0.022 in, partial decarburization outside and inside max. 0.559 mm, without total decarburization; partial decarb. out. max.: 0.432 mm; partial decarb. ins. max.: 0.432 mm

Vermerk / Remark / Remarque

Pos. / Item / Poste: 0025

Certificate remarks: The steel grade corresponds to MIL-T-6736B AMS 6360M, material free from mercury contamination, FAR BAA: 52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY. No weld repair has been carried out, Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K / Semi finished product examination, see appendix page 1 of 1

Pos. / Item / Poste: 0025

Macroscopic examination: acc. to ASTM-E 381

Pos. / Item / Poste: 0025

Magnetic particle inspec.: acc. to AMS-2301K/ASTM-E 1444, on prematerial

Pos. / Item / Poste: 0025

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial

Verkäufer(in) / Sales Personnel / Personne chargée : Mir Schwarz, Tel.: 05254 81-204311, Fax: 204391



AK

Benteler SteelTube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49 5254 81-0 Fax: +49 5254 113665

BENTELER ▶

SteelTube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

41-1023590/00172

Dokument-Nr.:
Document No.:
No. du document:

Blatt: 4 / 4

Page: 4 / 4

Page: 4 / 4

Prüf-Nr.:
Inspection No.:
No. du certificat:

Paderborn Schloß Neuhaus, 21.08.2017, TEL.: 05254-81-201766 FAX: 05254-81-201752

Abnahmeherauftragter
Inspection representative
Contrôleur

i. A. THOMAS GOLLAN / ICK

ACCEPTED BY

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
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Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.



Benteler Steel/Tube GmbH
 Residenzstraße 1
 33104 Paderborn
 Germany
 Tel.: (05254) 81-0 Fax: 49.5254.13666

BENTELER

Steel/Tube

Abnahmeprüfzeugnis EN 10204-3.1 / Anhang
 Inspection Certificate EN 10204-3.1 / appendix
 Certificat de réception EN 10204-3.1 / appendice

Dokument-Nr.
 Document No.:
 No. de document

41-1023590/001/Z

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 Page: 1 of 1
 Page: de

Halbzeuguntersuchung: Stahlsorte: 4130 / Semi finished product examination: grade 4130 / Produit semi-fin: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Korngröße Grain size Grosseur de grain (ASTM-E 112)	Härtbarkeit (min. Anforderungen) Hardenability (min. requirements) Tremperabilité (exigence min.) (ASTM-A 255)	Magnetholzprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM- 1444)		Macroätzung Macrostructure test Essai de macrostructure (ASTM-E 381)					
				min. 5	J(5/16") min. 35 HRC	J(8/16") min. 28 HRC	F max. 0,34.	S max. 0,25	max. S 2	max. R 1	max. C 2
606333	025	9-10	43		34	0,020	0,020		S 2	R 1	C 2
		Decarburization Depth	Outside 0,045 mm	Inside 0,000 mm							

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 21.08.2017
 Tel.: (05254) 81-201760 Fax: (05254) 81-201752

Abnahmbeauftragter
 Inspection representative
 Contrôleur
 Thomas Gollan

TW METALS
 T E S S E P T E M B E R
 2 5 1 7
 ACCEPTED BY 



MILL TEST REPORT

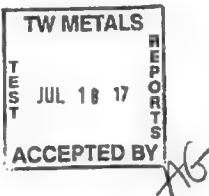
Purchaser.: TW METALS-Carol Stream		Certificate No.: 2017-6-59							
Contract No.: TWM P.O.No.: M49363338		Date of Issue.: 2017.6.12							
Commodity: Stainless Steel Seamless Tubes	Specifications <u>ASTM A213-15c/ASME SA213-15/ASTM A269-15a EAW</u>								
Process: Cold Drawn		Delivery Condition: OD Polished to 240 Grit							
Steel Grade	Heat Number	Lot Number	Dimensions	Quantity					
TP304/TP304L	YX1108-593	3-82	3/4"x0.049"x20'	Pieces	Feet				
Chemical Composition by Weight (%)									
Element	C	Mn	P	S	Si	Cr	Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	18.00-20.00	8.00-12.00	-	-
Ladle Analysis	0.023	0.70	0.032	0.001	0.36	18.50	8.05	-	-
Product Analysis	0.020	0.67	0.034	0.002	0.34	18.67	8.13	-	-
Mechanical Properties									
Test Item	Elongation (% in 2")		Tensile Strength (PSI) Rm			Yield Strength (PSI) Rp / 0.2%			
Requirements	≥35		≥75,000			≥30,000			
Test Results	63/64		97,000/98,000			41,000/42,000			
Test Item	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test	P.M.I. Test		
Requirements	-	HRB≤80	-	22%	e=0.09	-	-		
Test Results	-	76/78	-	Passed	Passed	-	OK		
Test Item	Eddy Current Test	Air Underwater Pressure Test	Ultrasonic Test	Intergranular Corrosion Test	Macroscopic Inspection				
Requirements	ASTM E 426	-	-	ASTM A262 E	End Cut	Appearance			
Test Results	Passed	-	-	OK	OK	OK			

ISO 9001:2008 Certified by CAS 117 16 QU 0053-06 ROS

PED Certified by SZUTEST 2195-PED-1526002

Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE
FAR BAA / DFARS BAA / FAR TAA

By:

James Shi

James Shi / Manager

Quality Control Department

We hereby certify that this report is true and correct.

Jiangsu Pufa Stainless Steel Tube Co., Ltd.

No. 99, Xuean Middle Road, Dongchen Town, Rugao City, Jiangsu Province, P.R.China

X

MILL TEST REPORT

Purchaser.: TW METALS-Carol Stream	Certificate No.: 2017-3-30
Contract No.: TWM P.O.No.: M49361319	Date of Issue.: 2017.3.25
Commodity: Stainless Steel Seamless Tubes	Specifications: ASTM A213-15c/ASME SA213-15/ASTM A269-15a EAW
Process: Cold Drawn	Delivery Condition: OD Polished to 240 Grit

Steel Grade	Heat Number	Lot Number	Dimensions	Quantity	
				Pieces	Feet
TP304/TP304L	YX1604-531	1-64	1/2"x0.049"x20'	2000	40,000

Chemical Composition by Weight (%)

Element	C	Mn	P	S	Si	Cr	Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	18.00-20.00	8.00-12.00	-	-
Ladle Analysis	0.017	1.20	0.034	0.001	0.33	18.20	8.05	-	-
Product Analysis	0.017	1.25	0.030	0.002	0.32	18.31	8.12	-	-

Mechanical Properties

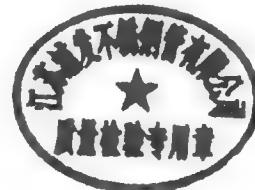
Test Item	Elongation (% in 2")		Tensile Strength (PSI)		Yield Strength (PSI)		
	Rm	Rp / 0.2%					
Requirements	≥35		≥75,000			≥30,000	
Test Results	61/62		97,000/98,000			42,000/43,000	
Test Item	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test	P.M.I. Test
Requirements	-	HRB≤80	-	22%	e=0.09	-	-
Test Results	-	77/79	-	Passed	Passed	-	OK
Test Item	Eddy Current Test	Air Underwater Pressure Test	Ultrasonic Test	Intergranular Corrosion Test	Macroscopic Inspection		
Requirements	ASTM E 426	-	-	ASTM A262 E	End Cut	Appearance	
Test Results	Passed	-	-	OK	OK	OK	

ISO 9001:2008 Certified by CAS 117 16 QU 0053-06 ROS

PED Certified by SZUTEST 2195-PED-1526002

Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE
FAR BAA / DFARS BAA / FAR TAA

By:

James Shi

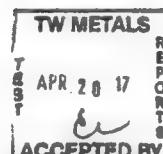
James Shi / Manager

Quality Control Department

We hereby certify that this report is true and correct.

Jiangsu Pufa Stainless Steel Tube Co., Ltd.

No. 99, Xuean Middle Road, Dongchen Town, Rugao City, Jiangsu Province, P.R.China



C

KAISER ALUMINUM FABRICATED PRODUCTS

CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

CUSTOMER PO NUMBER:		CUSTOMER PART NUMBER:		PRODUCT DESCRIPTION:			
M49369003-1		42558-144		Drawn Seamless Tube/Pipe			
KAISER ORDER NUMBER:	LINE ITEM.		SHIP DATE:	KAISER LOT NUMBER:	ALLOY:	TEMPER:	
223156	001		05/22/2017	F00240838	6061	T6	
WEIGHT SHIPPED:	QUANTITY:		B/L NUMBER:	DIAM/DAF/THKNS:	WIDTH:	LENGTH:	
610.000 LB	379.000 PCS		225370			12.000 FT	
SHIP TO:				SOLD TO:			
TW METALS INC 235 WEST TUBEWAY DRIVE CAROL STREAM, IL 60188 USA				TW METALS INC 760 CONSTITUTION DRIVE SUITE 204 EXTON, PA 19341 USA			

Actual Physical Properties

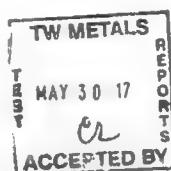
REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON%IACS	BEND
F00240838	0001	1	47.2	40.8	19.5	N/A	N/A	N/A
F00240838	0002	1	46.9	40.7	19.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	0.00
D20128	.59	.30	.22	.05	1.03	.10	.04	.03	.00	.00	.00	.01	.03

Applicable Requirements:

Description: OD: 0.6250"; Wall: 0.0650"; Round @
AMS4082P ~~AMS-WW-T-700/6C~~ ASTM B210-12 WW-T-700/6F
WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED.
This Product Complies to FAR BAA, DFARS BAA, FAR TAA
COMPLIES TO DIN EN 10204 JAN 2005
No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA
MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA
(DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5
TRADE AGREEMENTS).

Plant Serial: 00025044

Kaiser Order Number: 223156

Line Item: 001

KAISER ALUMINUM FABRICATED PRODUCTS

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

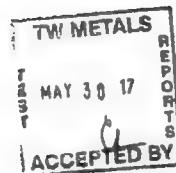
CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentmidt, Quality Manager



KAISER
ALUMINUM
FABRICATED PRODUCTS

CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

CUSTOMER PO NUMBER: M49376296-1	CUSTOMER PART NUMBER: 41952	PRODUCT DESCRIPTION: Drawn Seamless Tube/Pipe					
KAISER ORDER NUMBER: 224194	LINE ITEM: 001	SHIP DATE: 09/23/2017	KAISER LOT NUMBER: F00250486	ALLOY: 6061	TEMPER: T6		
WEIGHT SHIPPED: 474.000 LB	QUANTITY: 585.000 PCS	B/L NUMBER: 226892	DIAM/DAF/THKNS:	WIDTH:	LENGTH: 12.000 FT		
SHIP TO: TW-METALS INC 235 WEST TUBEWAY DRIVE CAROL STREAM, IL 60188 USA	SOLD TO: TW METALS INC 760 CONSTITUTION DRIVE SUITE 204 EXTON, PA 19341 USA						

Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON% IACS	BEND
F00250486	0001	1	48.0	41.5	17.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	0.00
D20419	.61	.27	.21	.04	.98	.09	.05	.03	.00	.00	.00	.01	.02

Applicable Requirements:

Description: OD: 0.3750"; Wall: 0.0580"; Round @
AMS4082P AMS-WW-T-700/6C ASTM B210-12
WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED.
This Product Complies to FAR BAA, DFARS BAA, FAR TAA
COMPLIES TO DIN EN 10204 JAN 2005
No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA
MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA
(DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5
TRADE AGREEMENTS).

Plant Serial: 00026215
Kaiser Order Number: 224194
Line Item: 001



KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager

A handwritten signature in black ink, appearing to read "Hans Kattentidt".



Plant Serial: 00026215
Kaiser Order Number: 224194
Line Item: 001

A handwritten signature in black ink, appearing to read "K".

KAISER

ALUMINUM

FABRICATED PRODUCTS

CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

CUSTOMER PO NUMBER		CUSTOMER PART NUMBER		PRODUCT DESCRIPTION					
M49370848-1		42588		Drawn Seamless Tube/Pipe					
KAISER ORDER NUMBER	LINE ITEM	SHIP DATE		KAISER LOT NUMBER	ALLOY	TEMPER			
223458	001	06/27/2017		F00243635	6061	T6			
WEIGHT SHIPPED:	QUANTITY:	B/L NUMBER:		DIAM/DAF/THKNS:	WIDTH	LENGTH			
788.000 LB	284.000 PCS	225879				12.000 FT			
SHIP TO:	SOLD TO:								
TW METALS INC 235 WEST TUBEWAY DRIVE CAROL STREAM, IL 60188 USA		TW METALS INC 760 CONSTITUTION DRIVE SUITE 204 EXTON, PA 19341 USA							

Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON% IACS	BEND
F00243635	0001	1	48.7	42.1	20.0	N/A	N/A	N/A
F00243635	0002	1	49.7	43.0	19.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	0.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	0.00
D30206	.59	.29	.22	.03	.98	.07	.04	.03	.00	.00	.00	.01	.02

Applicable Requirements:

Description: OD: 0.6250"; Wall: 0.1250"; Round @
AMS4082P ~~AMS-WW-T-700/6C~~ ASTM B210-12 WW-T-700/6F
WE TAKE EXCEPTION TO PARA. 5.2.1., Per AMS4082P, WAS NOT OILED.
This Product Complies to FAR BAA, DFARS BAA, FAR TAA
COMPLIES TO DIN EN 10204 JAN 2005
No Weld Repair. Mercury Free.



Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA
MATERIAL COMPLIES WITH FAR BAA (FAR 52.225-1, BUY AMERICAN ACT- SUPPLIES), DFARS BAA
(DFARS 252.225-7001 BUY AMERICAN ACT & BAL OF PAYMENTS PROG), AND FAR TAA (FAR 52.225-5
TRADE AGREEMENTS).

Plant Serial: 00025411

Kaiser Order Number: 223458

Line Item: 001

16

KAISER ALUMINUM FABRICATED PRODUCTS

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

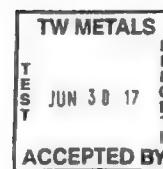
CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager



BENTELER**Steel/Tube**

Benteler Steel/Tube GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: + 49.5254.13666

ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1
EN 10204-2005-01

Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland
TW Metals
The Aboretum, Suite 204
760 Constitution Drive
EXTON PA 19341
USA

Dokument-Nr.:	41-1026599/001/P	Prüf-Nr.:	1 / 3
Document No.:		Inspection No.:	
No. du document:		No. du certificat:	
Kunden-Bestell-Nr.:	46005343 TW M49371988	Herrsteller:	Wärmelehrwerk/Ziehwerk
Purchase Order No.:		Manufacturer:	[DIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TÜV NORD CERT] [IATF 2014/6/16 CERTIFIED BY TÜV NORD SYSTEMS]
No. de commande du client:		Producteur:	
Benteler Auftrags-Nr.:	1639142	Herstellerzeichen:	
Benteler Order No.:		Manufacturer's brand:	
No. de commande Benteler:		Marque du producteur:	
Versandanzeig-Nr.:	4114983	Stamp of the Abnahmobauftragten:	WA
Dispatch Note No.:		Stamp of the inspection representative:	
No. d'avis d'expédition:		Prénom du contrôleur:	
Produkt:	NAHTLOSE STAHLROHRE	Stahlerschmelzungsverfahren:	ELBKROSTSTAHL
Produkt:	SEAMLESS STEEL TUBES	Steelmaking process:	ELECTRIC FURNACE
Produkt:	TUBES D' ACIER SANS Soudure	Procédé d'élaboration de l'acier:	FOUR ELECTRIQUE
Lieferbedingungen:	AMS-T-8736B-08 Type 1, ASTM-A 519-2006 (MIL-T-8736B) Type 1, AMS6360 Rev. M, AMS 2301K		
Terms of delivery:			
Conditions de livraison:			
Maße - Toleranzen:	AMS 2253E-83, Aircraft Type, Seamless, Cold Finished		
Dimensions-tolerances:			
Dimensions-tolerances:			
Stahlsorte:	GRADE 4130		
Steel grade:			
Nuance d'acier:	Condition N		
Lieferzustand:			
Delivery condition:			
Etat de livraison:			
Produktkennzeichnung:	FSD: BENTELER AMS6360M-AMS-T-8736 B-1-MIL-T-8736 B-1-AMS 2301K 4130 Condition N HEAT-NO.		
Product marking:	CD AQ S DIMENSIONS WA GERMANY		
Markage du produit:			
AZ = Aufdruckbezeichnung, BL = Blättertintenbezeichnung, Gravura à l'encre = Gravura à l'encre, PK = Farbmarkierung, marquage par peinture, FSD = Farbmarkierung, Color, Jet printet , Imprimante à jet d'encre de couleur, PS = Prägemarkung, marquage par pochonnage, TS = Tintenstrahlkennzeichnung, Ig marking , marquage sur étiquette, WT = Prägemarkung, marquage à jet d'encre, WT = WT = Lasermarkierung, Laser marking, Marquage à laser.			

Pos.	Stück	Maße	Gesamtlänge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen
Item	Number	Dimensions	Length total	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Número	Dimensions	Longueur totale	Poids	No. de coulée	Pression d'épreuve	Série no. des tubes	Longueurs multiples
0012	153	0.750" O.D. + 0.049" WT 20 FT - 24 FT	3664.37	1.345	606338	WT		

TW METALS
RE
SEP 27 17
OCT 8
C
ACCEPTED BY

Benteler Steel/Tube GmbH
Postfach 13 40
Duischian
33043 Paderborn
Tel.: + 49.5254.81-0 Fax: + 49.5254.13666

BENTELER ▶

Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1

CERTIFICATE DE RECEPTION EN 10204-3.1

Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Eprouvette à section complète

Pos.	Proben-Nr.	Schmelzen-Nr.	Probennahmestellung	Streckgrenze	Zugfestigkeit	Dehnung	Prüf-Nr.:	Inspection No.:	Blatt:	3 /
Item	Specimen No.	Heat No.	Specimen dimensions	Yield strength	Tensile strength	Elongation	No. du certificat:	No. du certificat:	Page:	3
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limite d'élasticité	Résistance à la traction	Allongement				
Anforderungen				Rp 0,2 %	Rm	A2"	1. Formel			
Requirements				ksi	ksi	%	1. Formule			
Exigences				mm	MIN 75	MIN 95	1. Formule			
0012	000003	606333B	19,05 X	1,26	116	126	19,00			
0012	000004	606333B	19,05 X	1,26	115	126	19,00			
0012	000005	606333B	19,05 X	1,26	117	126	19,00			

Randentkohlung / Surface decarbonization / Decarbonation superficielle

Pos. / Item / Poste: 0012
acc. to AMS-6360, partial decarbonization outside max. 0.009 in, partial decarbonization inside max. 0.012 in, partial decarbonization outside and inside max. 0,305 mm, without total decarbonization; partial decarb. out. max.: 0,229 mm; partial decarb. ins. max.: 0,229 mm

Vermerk / Remark / Remarque

Pos. / Item / Poste: 0012
Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA.
52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out,
Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1.

Pos. / Item / Poste: 0012

Macroscopic examination: acc. to ASTM-E 381

Pos. / Item / Poste: 0012

Magnetic particle inspec.: acc. to AMS 2301K/ASTM-E 1444, on prematerial

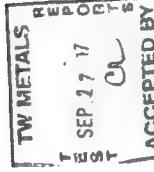
Pos. / Item / Poste: 0012

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial

Verkäufer(in) / Sales Personnel / Personne chargée : Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391
Paderborn Schloß Neuhaus, 06.09.2017, TEL.: 05254.81-201768 FAX: 05254.81-201752

Abnahmbeauftragter
Inspection representative
Controleur

I. A. THOMAS GOLLAN / Tat
Es wird bestätigt, dass die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specifications. This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.



Benteler SteelTube GmbH
Residenzstraße 1
22449 Neuss

BENTELER ▲

Germany
Tel.: 49.5254.81-0 Fax: 49.5254.13616

**Abnahmeprüfzeugnis EN 10204-3.1 / Anhang
Inspection Certificate EN 10204-3.1 / appendix
Certificat de réception EN 10204-3.1 / appendix**

Dokument-Nr.
Document No.:
No. de document:
41-1026599/001/P

Blatt:
Page:
Page:
1 of
de

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fin: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Körngröße Grain size Grosseur de grain (ASTM-E 112)	Hartbarkeit (min. Anforderungen) Hardenability (min. requirements) Tremperabilité (exigence min.)		Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM-1444)	Macrostruktur test Macrostructure test Essai de macrostructure (ASTM-E 381)		
			min. 5	J(5/16") min. 35 HRC	J(8/16") min. 28 HRC	F max. 0,34	S max. 0,25	max. S 2
606338	012	9-10	37	33	0,020	0,020	S 2	R 1
Decarburization Depth		Outside 0,000 mm	Inside 0,000 mm				C 2	

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 06.09.2017
Tel.: (05254.81-201760 Fax: (05254.81-201752

Thomas Gollan

Abnahmbeauftragter Inspection representative

THE METALS

TW METALS
LJF
TROPE

Benteler Steel/Tube GmbH
Postfach 13 40
33033 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER ▼

Steel/Tube

ABNAHMEPRÜFZEUGNIS EN 10204-3.1 INSPECTION CERTIFICATE EN 10204-3.1 CERTIFICATE DE RECEPTION EN 10204-3.1 EN 10204:2005-01		Document-Nr.: Document No.: No. du document:	41-1007237/001/P	Prüf-Nr.: Inspection No.: No. du certificat:	Blatt: 1 / 3			
Kunden-Bestell-Nr.: Purchase Order No.: No. de commande du client:	46004962/TW M49365374	Hersteller: Manufacturer: Producteur:	Wärmetauwerk/Zieherei [DIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TÜV/NORD CERT] [IPD 2014/88/EU CERTIFIED BY TÜV/NORD SYSTEMS]		Page: 1 / 3			
Benteler Auftrags-Nr.: Briefeler Order No.: No. de commande Benteler:	1634562	Herstellerzeichen: Manufacturer's brand: Marque du producteur:			Page: 1 / 3			
Verandanzeiger-Nr.: Dispatch Note No.: No. d'avis d'expédition:	4195453	Stempel des Abnahmeherausfrägen: Stamp of the inspection representative: Pointage du contrôleur:	WA		Page: 1 / 3			
Produkt: NAHTLOSE STAHLROHRE Product: SEAMLESS STEEL TUBES Produit: TUBES D'ACIER SANS SOUDURE		Stahlerschmelzungsverfahren: Steelmaking process: Procédé d'élaboration de l'acier:	ELEKTROSTAHL ELECTRIC FURNACE FOUR ELECTRIQUE		Page: 1 / 3			
AMS-T-6736B-08 Type 1, ASTM-A 519-2006 MIL-T-6736B Type 1, AMS6360 Rev. M, AMS 2301K		Lieferbedingungen: Terms of delivery: Conditions de livraison:						
MAßE - Toleranzen: Dimensions-tolerances: Dimensions-tolerances:		AMS 2253E-83, Aircraft Type, Seamless, Cold Finished						
Stahlsorte: Steel grade: Nuance d'acier:		GRADE 4130						
Lieferrzustand: Delivery condition: État de livraison:		Condition N						
Produktkennzeichnung: Product marking: Märkage du produit:		FSD: BENTELER AMS6360M-AMS-T-6736 B-1-MIL-T-6736 B-1-AMS 2301K 4130 Condition N HEAT-NO. CD AQ S DIMENSIONS WA GERMANY						
AEZ = Abzinkenbedruckung, Etching ink marking, Gravure à l'encre - FK = Farbmarkierung, farbige Farbe, color marking, marquage par peinture - PS = Farbschablonierung, patin: stenciling, marquage par peinture - PSD = Farbschablonierer, Color jet printer, imprimante à jet d'encre de couleur - LR = Lasermarkierung, Laser marking, Marquage laser - FKE = Etikett kennzeichnung, Tag marking, marquage sur étiquette - PS = Projektempfapi, ole stamp, marquage par poignotage - TS = Trittentkennzeichnung, Ink jet spray marking, imprimante à jet d'encre.								
Pos.	Stück	Maße	Gesamtlänge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachhängen
Item	Number	Dimensions	Length total	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Nombré	Dimensions	Longueur totale	Poids	No. de coulée	Pression d'épreuve	Série de no. des tubes	Longueurs multiples
0012 91	0.750"	0.083" WT 20 FT - 24 FT	feet feet	1851,05	1080	603114		

ABNAHMEPRÜFZEUGNIS EN 10204-3.1				Dokument-Nr.: 41-1007237/001/P	Prüf-Nr.: 3 / 3
INSPECTION CERTIFICATE EN 10204-3.1				Document No.: No. du document:	Inspection No.: No. du certificat:
CERTIFICAT DE RECEPTION EN 10204-3.1					
Zugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Épreuve à section complète					
Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Zugfestigkeit	Dehnung
Item	Specimen No.	Heat No.	Specimen dimensions	Tensile strength	Elongation
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limité élastique	Resistance à la traction Allongement
Anforderungen					
Requirements					
Exigences					
0012	000003	603114	19,04 X 2,12 102	R _m 0,2 % KSI 55	A2" % MIN 12.00
				123	18,00

Randentkohlung / Surface decarburization / Décarburation superficielle

acc. to AMS-6360, partial decarburization outside max. 0,014 in, partial decarburization inside max. 0,014 in, partial decarburization outside and inside max. 0,018 in, partial decarburization outside and inside max. 0,457 mm, without total decarburization; partial decarb. out. max.: 0,356 mm; partial decarb. ins. max.: 0,356 mm

Vermerk / Remark / Remarque

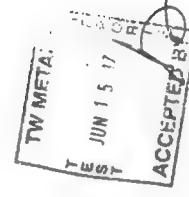
Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: 52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1.

Macroscopic examination: acc. to ASTM-E 381

Magnetic particle inspec.: acc. to AMS 2301K/ASTM-E 1444, on prematerial

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, on prematerial

Verkäufer(in) / Sales Personnel / Personne chargée : Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391



Paderborn Schloß Neuhaus, 28.05.2017, TEL.: 05254.81-201768 FAX: 05254.81-201752

Abnahmbeauftragter
Inspection representative

i. A. THOMAS GOLLAN / Tat
Contrôleur
We certify that the supplied products comply with the order specification. This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.

Benteler Steel/Tube GmbH
 Residenzstraße 1
 33104 Paderborn
 Germany
 Tel.: 49 5254 81-0 Fax: 49 5254 13666

BENTELER 

Steel/Tube

**Abnahmeprotokoll EN 10204-3.1 / Anhang
 Inspection Certificate EN 10204-3.1 / appendix
 Certificat de réception EN 10204-3.1 / appendice**

Dokument-Nr.
 Document No.:
 No. de document:

41-1007237/001/P

Blatt: 1 von 1
 Page: 1 of 1
 Page: 1 de

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fin: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Korngröße Grain size Grosseur de grain (ASTM-E 112)	Härbarkeit (min. Anforderungen) Hardenability (min. requirements) Tremperabilité (exigence min.) (ASTM-A 255)	Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM- 1444)			Macroätzung Macrostructure test Essai de macrostructure (ASTM-E 381)
				min. 5 min. 35 HRC	J(5/16") min. 28 HRC	F max. 0,34 S max. 0,25	
603114	012	9	40	32	0,020	0,015 S 2 R 1	C 2
			Decarburization Depth	Outside 0,000 mm Inside 0,000 mm			

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 29.05.2017
 Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752

Abnahmeverantwortlicher
 Inspection representative
 Contrôleur
 Thomas Gollan



MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130NT0.750W.083

DATE: DEC 05 2017

PO / BATCH NO.: 038120/5017143

MATERIAL CERT REC'D: Yes
 QUANTITY RECEIVED: 20"
 QUANTITY INSPECTED: 20"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .750
 THICKNESS RECEIVED: .750
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>MIL-T6736D</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>Heat # 60314</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>PL</u>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING

SPECIFICATION: MIL-T-6736 (R AAMS 6371, 6360, 6361, 6362, 6373, 6374)

PART NUMBER: M4130N[DIA][OD][WALL]
WHERE: "DODD" = OUTER DIAMETER (IN INCHES)
AND ".TTT" = WALL THICKNESS (IN INCHES)

EG. 3/4" TUBING WITH .035" WALL = M4130N0.750W.035

RELEASED
2012-06-16
AP

B	REFORMAL DWG TO ACCOMODATE ADDITIONAL TUBE DIAMETERS AND WALL THICKNESS	RP	12-04-02
A	NEW ISSUE	JB	01-05-16
REV	DESCRIPTION	BY	DATE
DESIGN	JB	DART AEROSPACE LTD	
DRAWN	RP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. B
MFG. APPR.		M4130N-T	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		STEEL TUBING	NTS
DATE	12-04-02	DRAWN BY DART AEROSPACE LTD CHECKED BY DART AEROSPACE LTD MFG. APPR. BY DART AEROSPACE LTD APPROVED BY DART AEROSPACE LTD DE APPR. BY DART AEROSPACE LTD This document is the property of DART AEROSPACE LTD and is to be used only for the purpose for which it was issued. Any unauthorized copying or disclosure of this document without the written permission of DART AEROSPACE LTD is a violation of law.	

D	1	2	3	4	5	6	7	8
C								
B								
A								

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M413010.750W.049
 DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017142

MATERIAL CERT REC'D: Y-15
 QUANTITY RECEIVED: 241
 QUANTITY INSPECTED: 241
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .750
 THICKNESS RECEIVED: .750
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> <input type="checkbox"/> (N)	
CORRECT FINISH	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N
CORROSION	<input checked="" type="checkbox"/> <input type="checkbox"/> (N)	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N <u>mil-T-6736B</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N
PHOTO REQUIRED	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	(N)
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N <u>Heat# 606338</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	N
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	(N)
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> <input type="checkbox"/> (Y)	(N)

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>ml</u> <u>DAS</u>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING

SPECIFICATION: MIL-T-6736 OR AIMS 6371, 6380, 6361, 6362, 6373, 6374

PART NUMBER: M4130N TD.DDD W.TTT

WHERE: "DDD" = OUTER DIAMETER (IN INCHES)
AND "TTT" = WALL THICKNESS (IN INCHES)

DIA. WALL

EG. 3/4" TUBING WITH .035" WALL = M4130N10.750W.035

RELEASE
2012-04-16

B		REFORNING TO ACCOMODATE ADDITIONAL TUBE		RPP	12.04.02
A		NEW ISSUE		JB	01.05.16
REV	DESCRIPTION	BY	DATE		
DESIGN	JB	DART AEROSPACE LTD		A	
DRAWN	RP	HAWKESBURY, ONTARIO, CANADA		REV. B	
CHECKED	A.P.	DRAWING NO.		SHEET 1 OF 1	
MFG. APPR.		M4130N-T		SCALE	
APPROVED		TITLE		NTS	
DE APPR.		STEEL TUBING			
		DATE		COPYRIGHT © 2001 BY DART AEROSPACE LTD.	
		THE DRAWING IS FOR INFORMATION ONLY. IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THAT IT IS APPROPRIATE FOR THE INTENDED USE.		THIS DRAWING IS THE PROPERTY OF DART AEROSPACE LTD. IT IS NOT TO BE COPIED OR USED BY OTHERS WITHOUT THE EXPRESS WRITTEN CONSENT OF DART AEROSPACE LTD.	

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6t0.625W.125
 DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017141

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 12'
 QUANTITY INSPECTED: 12'
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.625
 THICKNESS RECEIVED: 0.625
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<i>AMS-WW-T-7006C</i>
CORRECT THICKNESS	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<i>Hard-IT P002436350002</i>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>JL</u> <small>DAS 9</small>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

PURCHASE MATERIAL: 6061-T6/T62/T6510/10511 SEAMLESS TUBING
 SPECIFICATION: WW-1-7006
OR QQ-A-2268 OR QQ-A-2266
 OR AMS 4080 OR AMS 4082 OR AMS 4083
 OR ASTM B210 OR ASTM B241

PART NUMBER:

M6061T610D_{OD}W_{WT}T_{WT}

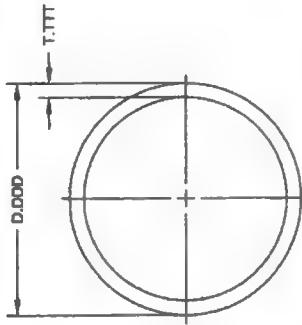
WHERE "D_{OD}" = OD IN INCHES

"T_{WT}" = WALL THICKNESS

E.G. 3¹⁵° OD X 0.058 WALL = M6061T610.375W0.058

MATERIAL TOLERANCE:

PER ANSI H35.2



RELEASED
 2013-07-02
AM

REV.		DESCRIPTION		BY	DATE
C		COMPLETE REFORMAT, ADDED T6510 & T6511, ADDED AMS 4083, ASTM B210 & ASTM B241	AJS		13.06.12
B		ADDED MATERIAL TOLERANCE		CP	04.01.23
A		NEW ISSUE		DS	01.06.21
DESIGN	AJS	DART AEROSPACE LTD			
DRAWN	AJS	HAWTHORPE, ONTARIO, CANADA			
CHECKED		REV C			
MFG. APPR.		DRAWING NO.			
APPROVED		M6061T610			
DE APPR.		TITLE			
		6061-T6 TUBING			
DATE	13.06.12	SCALE			
		NTS			
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		THE INFORMATION CONTAINED HEREIN IS UNPUBLISHED PROPRIETARY INFORMATION OF DART AEROSPACE LTD. IT MAY NOT BE COPIED, REPRODUCED, OR DISCLOSED, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF DART AEROSPACE LTD.			

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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061T6T0.375W.058

PO / BATCH NO.: 038920/5017140

DATE: DEC 05 2017

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: .24"
 QUANTITY INSPECTED: .24"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .375
 THICKNESS RECEIVED: .375
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<u>AMS-WW-T-700/6c</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<u>Heat # P002504860001</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>jl</u> <u>9</u> <u>00</u>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

PURCHASE MATERIAL: 5091-178/1782/17851078511 SEAMLESS TUBING
SPECIFICATION: WW-T-7006
OR MIL-A-20018 OR QQ-A-2258
OR AMS 4080 OR AMS 4082 OR AMS 4083
OR ASTM B210 OR ASTM B241

PART NUMBER:

M6061-T6 T.D.OD OD [WALL]

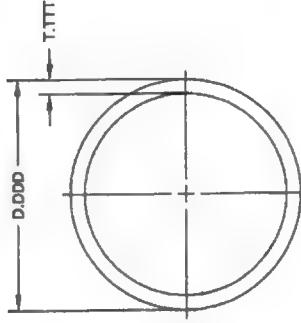
WHERE "D.OD" = OD IN INCHES

"T.TT" = WALL THICKNESS

EG. 3/8" OD X 0.058 WALL = M6061-T6 T0.375W0.058

MATERIAL TOLERANCE:

PER ANSI H452



RELEASED
2013-07-02

DESIGN	A/S	DESCRIPTION	BY	DATE
C	COMPLETE REFORMAT. ADDED T8510 & T8511. ADDED AMS 4083, ASTM B210 & B241 ADDED MATERIAL TOLERANCE	A/S		13.06.12
B	ADD QQ-A-20018 & QQ-A-2258	CP		04.01.23
A	NEW ISSUE	DS		01.08.21
REV.				

DESIGN	A/S	DESCRIPTION	BY	DATE
D	A/S	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		
DRAWN	A/S	DRAWING NO.	REV. C	
CHECKED		M6061-T6T	SHEET 1 OF 1	
MF.G. APPR.		TITLE	SCALE	
APPROVED		6061-T6 TUBING	NTS	
DE APPR.				
DATE	13.06.12			

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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M606176T0.625W.065
 DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017139

MATERIAL CERT REC'D: Yes
 QUANTITY RECEIVED: 36"
 QUANTITY INSPECTED: 36"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.625
 THICKNESS RECEIVED: 0.625
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

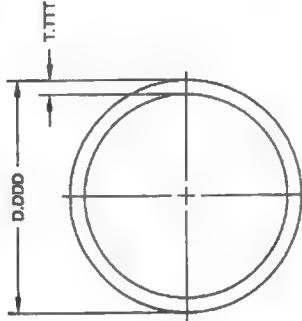
DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> X <input type="checkbox"/> N	<u>U/W-T-700/6c</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>part# 1002408380002</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

OC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>jl</u> DAS 9 3-80	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



△
PURCHASE MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING

△
SPECIFICATION:
WW-T-2008
OR QQA-A-2008 OR AMS 4082 OR AMS 4083
OR AMS 4080 OR AMS 4082 OR AMS 4083
OR ASTM B210 OR ASTM B241

PART NUMBER:
M6061-T6(TD.000)W(T.000)

WHERE "D.DD" = OD IN INCHES

"T.TT" = WALL THICKNESS

EG: 3/8" OD X 0.058 WALL = M6061-T6(T0.375)W(0.058)

MATERIAL TOLERANCE:
PER ANSI H95.2

△
C

RELEASED
2013-07-02
△
W

COMPLETE REFORMAT, ADDED T6510 & T6511. ADDED AMS 4083, ASTM B210 & ASTM B241		AJS	13.06.12
ADDED MATERIAL TOLERANCE ADD QQA-A-2008 & QQA-A-2255B		CP	04.01.23
A NEW ISSUE		DS	01.06.21
REV.		DESCRIPTION	BY DATE
DESIGN	AJS	DART AEROSPACE LTD	
DRAWN	AJS	HAWKES BURY ONTARIO, CANADA	
CHECKED	△	DRAWING NO.	REV C
MFG. APPR.	△	MG06116T	SHEET 1 OF 1
APPROVED	△	TITLE	SCALE
DE APPR.	△	6061-T6 TUBING	NTS
DATE	13.06.12	COPYRIGHT © 2001 BY DART AEROSPACE LTD	
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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304tbo.500W.049

DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017138

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 40"
 QUANTITY INSPECTED: 40"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .500
 THICKNESS RECEIVED: .500
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<i>ASTM A213-15C</i>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<i># YX1604531</i>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>rd</u> <small>DAS</small>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: ANSI 304/316 SS, SEAMLESS ROUND TUBING
SPECIFICATION: ASTM A213 OR ASME SA213 OR ASTM A269
WALL THICKNESS TOLERANCE PER ASTM A269 AS FOLLOWS:

OD (IN)	PERMISSABLE OD TOL. (IN)	PERMISSABLE WALL TOL.
UP TO $\frac{1}{2}$	± 0.005	$\pm 15\%$
$\frac{1}{2}$ TO $1\frac{1}{2}$ EXCL.	± 0.005	$\pm 10\%$
$1\frac{1}{2}$ TO $3\frac{1}{2}$ EXCL.	± 0.010	$\pm 10\%$
$3\frac{1}{2}$ TO $5\frac{1}{2}$ EXCL.	± 0.015	$\pm 10\%$
$5\frac{1}{2}$ TO 8, EXCL.	± 0.030	$\pm 10\%$

PART NUMBER:

M304TR0|OD|W|TTT|
OD|W|WALL|

WHERE "D.DD" = OUTSIDE DIAMETER IN INCHES
AND "TTT" = WALL THICKNESS IN INCHES

EG. 0.375" OD X 0.065" WALL TUBING = M304TR0.375W.065

RELEASED
8/26/23 MP

B	REFORMAT DWG. ADD SPECS (ZN D8-1). REF PAR 038-020A	CP	08.10.20
A	NEW ISSUE	DS	01.06.08
REV	BY	BY	DATE
DESIGN	<i>[Signature]</i>	DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	REV. B
CHECKED		DRAWING NO.	SHEET 1 OF 1
MFG. APPR.		M304 TR	
APPROVED	<i>[Signature]</i>	TITLE	
DE APPR.		304/316 ROUND TUBING	
DATE	08.10.20	SCALE	NTS

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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M3041tro.750W.049
 DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017137

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 160"
 QUANTITY INSPECTED: 160"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.750
 THICKNESS RECEIVED: 0.750
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORRECT FINISH	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORROSION	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORRECT GRAIN DIRECTION	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORRECT MATERIAL PER M-DRAWING	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	<i>Astm A213 - 15C</i>
CORRECT THICKNESS	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORRECT REF # TO LINK CERT	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	<i>Heat # YX1108593</i>
CORRECT MATERIAL IDENTIFICATION	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
CORRECT M# ON THE MATERIAL	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>jl</u> DAS 9	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 304/316 SS SEAMLESS ROUND TUBING
ASTM A213 OR ASME SA213 OR ASTM A269

WALL THICKNESS TOLERANCE PER ASTM A269 AS FOLLOWS:

OD (IN)	OD TOL. (IN)	PERMISSABLE WALL TOL.
UP TO $\frac{1}{2}$	±0.005	±15%
$\frac{1}{2}$ TO $1\frac{1}{2}$	±0.005	±10%
$1\frac{1}{2}$ TO $3\frac{1}{2}$	±0.010	±10%
$3\frac{1}{2}$ TO $5\frac{1}{2}$	±0.015	±10%
5 $\frac{1}{2}$ TO 8 EXCL.	±0.030	±10%

PART NUMBER:

M304TR|D,DDD|W|TTT|
 OD | WALL |

WHERE "D,DDD" = OUTSIDE DIAMETER IN INCHES
 AND "TTT" = WALL THICKNESS IN INCHES

EG. 0.375" OD X 0.065" WALL TUBING = M304TR0.375W.065

B	REFORMAT DWG ADD SPECS (ZN DB-1), REF PAR 084-20A	C/P	08.10.20
A	NEW ISSUE	DS	01.06.08
REV	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	
MFG. APPR.		M304TR	REV. B
APPROVED		TITLE	SHEET 1 OF 1
DE APPR.		304/316 ROUND TUBING	SCALE
DATE	08.10.20	NTS	

RELEASED


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MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130NT1.0004.120
 DATE: DEC 05 2017

PO / BATCH NO.: 038420/5017136

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 20"
 QUANTITY INSPECTED: 20"
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 1"
 THICKNESS RECEIVED: 1"
 SHEET SIZE ORDERED: N/A
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<i>mil-T6736B</i>
CORRECT THICKNESS	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
PHOTO REQUIRED	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	<i>Heat # 606333</i>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input checked="" type="checkbox"/> <input type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input checked="" type="checkbox"/> <input type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	WEBSTER

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>rd</u> <small>DAS 9</small>	SIGNED OFF BY: _____
DATE: <u>DEC 05 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 4130N SEAMLESS STEEL TUBING
SPECIFICATION: MIL-T-6736D OR AMS 6371, 6360, 6361, 6362, 6373, 6374
PART NUMBER: M4130N(D.D.D W. T.T.T)
WHERE: D.D.D = OUTER DIAMETER (IN INCHES)
M4130N(D.D.D W. T.T.T)
DIA. WALL

EG. 3/4" TUBING WITH .035" WALL = M4130N(0.750W.035)

RELEASE
2012-04-16

REV.	DESCRIPTION	BY	DATE
B	REFORMAT DING TO ACCOMMODATE ADDITIONAL TUBE	RP	12.04.02
A	NEW ISSUE	JB	01.05.16

DESIGN JB DART AEROSPACE LTD

DRAWN RP HAWKESBURY, ONTARIO, CANADA

CHECKED A.P. DRAWING NO.

MFG. APPR. G.J. M4130N-T

APPROVED G.J. TITLE

DE APPR. G.J. STEEL TUBING

DATE 12.04.02

NTS

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